

MINNESOTA STATE RETIREMENT SYSTEM

HIGHWAY PATROLMEN'S FUND

ACTUARIAL VALUATION AS OF

JUNE 30, 1981

DECEMBER 18, 1981

December 18, 1981

Board of Directors
Minnesota State Retirement System
529 Jackson at 10th Street
St. Paul, Minnesota 55101

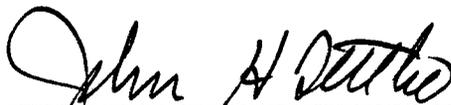
Ladies and Gentlemen:

We have performed an actuarial valuation of the Minnesota State Retirement System Highway Patrolmen's Fund as of June 30, 1981.

The valuation was performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and Touche Ross & Co.

We hereby certify that on the basis of our valuation, contributions required from employees and the State under Minnesota Statutes (Chapter 352B) represent 93.3% of the requirements set forth in Chapter 356. Furthermore, the entry age normal cost method was utilized in determining the accrued liability for all benefits payable under the Fund.

TOUCHE ROSS & CO.



John H. Flittie, F.S.A.



Andrea Feshbach, F.S.A.

TABLE OF CONTENTS

	<u>Page</u>
Report Highlights	1
Purpose and Summary	3
Valuation Assets	4
Actuarial Balance Sheets	4
Minnesota Post Retirement Investment Fund	12
Unfunded Accrued Liability	12
Employee Data	16
Plan Valued	16
Actuarial Methods and Assumptions	27

TABLES

		<u>Page</u>
TABLE 1	Summary of Actuarial Valuation as of June 30, 1981	5
TABLE 2(a)	Accounting Balance Sheet as of June 30, 1981	7
TABLE 2(b)	Actuarial Balance Sheet as of June 30, 1981	8
TABLE 3(a)	Chapter 356 Balance Sheet as of June 30, 1981	9
TABLE 3(b)	Determination of Accrued Liability and Unfunded Accrued Liability as of June 30, 1981	10
TABLE 4	Determination of MPRI Fund Participation and Reserves as of June 30, 1981	13
TABLE 5	Analysis of Income and Deductions From Income and Effect on the Unfunded Accrued Liability	14
TABLE 6	Analysis of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1981	15
<u>Employee Data:</u>		
TABLE 7	Covered Highway Patrolmen Census Data as of June 30, 1981	17
TABLE 8	Highway Patrolmen's Plan Annuitant Census Data as of June 30, 1981	18
TABLE 9(a)	Service Groups by Age Groups	20
TABLE 9(b)	Distribution of Annual Earnings by Age Groups	21
TABLE 9(c)	Retiree Benefit Distribution	23
TABLE 9(d)	Retiree Age Distribution	22

REPORT HIGHLIGHTS

	<u>6/30/80**</u>	<u>6/30/81</u>
A. Financial and Actuarial Status		
1. Valuation Assets	49,620,012	58,720,161
2. Accrued Liability	85,830,394	100,517,909
3. Unfunded Accrued Liability	36,210,382	41,797,748
4. Accrued Liability Funding Ratio (A1/A2)	57.81%	58.42%
5. Normal Cost*	2,790,556 (15.50)	3,149,108 (15.77)
B. Contributions		
1. Chapter 356 Requirement	5,214,379	5,955,620
2. Actual Prescribed Contribution (Chapter 352)	5,041,004 (28.00)	5,590,875 (28.00)
3. Sufficiency (2 / 1)	96.7%	93.3%
C. Depth of Funding - Plan Continuation Basis		
1. Present Value of Accrued Benefits	78,698,547	91,527,942
2. Depth of Funding (A1 / C1)	63.05%	64.16%

* Parentheses indicate contribution levels as a percentage of salary.

** From the actuarial valuation as of 6/30/80 prepared by the Wyatt Co.

REPORT HIGHLIGHTS (continued)

	<u>6/30/80</u>	<u>6/30/81</u>
D. Plan Participants		
1. Active Members		
a. Number	782	793
b. Covered payroll	18,003,587	19,967,408
2. Retired Members/Beneficiaries		
a. Number	302	312
b. Average annual benefit payable	5,030	5,699
3. Deferred Annuitants		
a. Number	23	25
b. Average annual vested benefit	7,303	8,503
4. Former Members Without Vested Rights		
a. Number	13	10
b. Average employee contributions	184	876

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

) ACTUARIAL VALUATION AS OF JUNE 30, 1981

PURPOSE AND SUMMARY

The purpose of this report is to set forth the financial status of the Minnesota State Retirement System (MSRS) Highway Patrolmen's Fund in accordance with the applicable provisions set forth in Chapter 356 and Chapter 11A of the Minnesota Statutes.

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirement (in addition to the experience study required every fourth year) is that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 5% interest rate and a 3-1/2% salary scale assumption:

1. The assets of the plan and the present value of all benefits which will be payable from the plan.
2. The normal cost of the plan (as a level percentage of payroll) based on the entry age normal cost method.
3. The accrued liability of the plan, defined as the present value of all benefits less the present value of future entry age normal costs.
4. An actuarial balance sheet showing accrued assets, accrued liabilities, and the deficit from full funding of the accrued liability (unfunded accrued liability).
5. The annual contribution required to pay normal cost and amortize the June 30, 1981 unfunded accrued liability by June 30, 2009.
6. An analysis explaining the increase or decrease in the unfunded accrued liability since the last valuation.

) Chapter 11A of the Minnesota Statutes pertains to the operation of the Minnesota Post Retirement Investment Fund (MPRI Fund). It includes requirements regarding the determination of the present value of benefits payable from the MPRI Fund (as of June 30, 1981 and as of January 1, 1982), and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the Highway Patrolmen's Fund and the MPRI Fund.

This reporting on the status of the Highway Patrolmen's Fund as of June 30, 1981, is intended to comply with all of the requirements regarding actuarial reporting that are set forth in Chapters 356 and 11A of the Statutes. The Appendix at the end of the report cross-references the information of the Minnesota Statutes set forth herein with that specifically called for under Chapters 356 and 11A respectively.

There have been no significant changes from last year in the methods used in the valuation.

VALUATION ASSETS

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1981. The Accounting Balance Sheet furnished by the Executive Director is set forth in Table 2(a).

ACTUARIAL BALANCE SHEETS

Table 2(b) sets forth an Actuarial Balance Sheet summarizing the actuarial valuation. Whereas the previously mentioned Accounting Balance Sheet (Table 2(a)) balances the current assets to date with current accumulated reserves for benefits payable, the Actuarial Balance Sheet compares total assets, including the present value of all future contributions payable to the plan, with the present value of all benefits payable from the plan.

The derivation of items A3, a, b and c in that table is as follows:

1. Present value of future normal costs (Table 3b)	\$38,749,759
2. Present value of future employee contributions (A2)	\$16,545,088
3. <u>Item A3a</u> = (1) - (2)	\$22,204,671
4. Present value of future employer matching contribution (12% of pay)	\$28,363,008
5. Amount for expenses (.18% of pay)	\$ 425,445
6. <u>Item A3b</u> = (4) - (3) - (5)	\$ 5,732,892
7. <u>Unfunded Accrued Liability</u> (Table 3b)	\$41,797,748
8. <u>Item A3c</u> = (7) - (6)	\$36,064,856

Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b) and 4 which set forth the determination of the unfunded accrued liability and the status of the MPRI Fund as of June 30, 1981.

Table 1

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Summary of Actuarial Valuation as of June 30, 1981

A. BASIC DATA		
1. Active members		
a. Number		793
b. Covered payroll		19,967,408
2. Retired members/beneficiaries		
a. Number		312
b. Average annual benefit payable		5,699
3. Deferred annuitants		
a. Number		25
b. Average annual vested benefit		8,503
4. Former members without vested rights		
a. Number		10
b. Average employee contributions		876
B. BASIC FINANCIAL RESULTS		
1. Normal cost		3,149,108
2. Accrued liability		100,517,909
3. Valuation assets		58,720,161
4. Portion of accrued liability funded		58.42%
5. Unfunded accrued liability (2 - 3)		41,797,748
C. DETERMINATION OF ANNUAL REQUIREMENT IN ACCORDANCE WITH CHAPTER 356*		
1. Normal cost		3,149,108
		(15.77)
2. Assumed operating expenses		35,941
		(0.18)
3. Amortization of the unfunded accrued liability by June 30, 2009		2,805,571
		(14.05)
4. Total Chapter 356 requirement (1 + 2 + 3)		5,990,620
		(30.00)
D. DETERMINATION OF CONTRIBUTION SUFFICIENCY**		
1. Actual prescribed contributions (Chapter 352B)		
a. Employee contributions		1,397,719
		(7.00)
b. Employer "matching" contribution		2,396,089
		(12.00)
c. Employer "additional" contribution		1,797,067
		(9.00)
d. Total of (a) through (c)		5,590,875
		(28.00)
2. Chapter 356 requirements (Per Item C4)		5,990,620
3. Sufficiency (1(d) / 2)		93.3%

(con't.)

Table 1 (con't.)

E. DEPTH OF FUNDING - PLAN CONTINUATION BASIS

1. Present value of accrued benefits	
a. Active members	69,100,143
b. Deferred annuitants	2,163,174
c. Former members without vested rights	8,758
d. Survivors - children	126,836
e. Disabled members	1,007,850
f. Participation in MPRI Fund	19,121,181
g. Total present value of accrued benefits	91,527,942
2. Valuation assets	58,720,161
3. Portion of accrued benefits funded (2 / 1(g))	64.16%

* Parentheses indicate Chapter 356 contribution levels as a percentage of salary.

** Estimated July 1, 1980 - June 30, 1981 contributions on an accrual basis. Parentheses indicate statutory annual contribution levels as a percentage of salary, as set forth in Chapter 352B of the Minnesota Statutes.

Table 2(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Accounting Balance Sheet as of June 30, 1981

A. ASSETS			
1.	Cash		471.34
2.	Short term investments (at cost)		5,311,051.25
3.	Accounts receivable:		
	a. Accrued employee contributions	64,992.56	
	b. Accrued employer contributions	194,947.76	
	c. Employee buy backs	<u>1,655.35</u>	261,595.67
4.	Due from the MPRI Fund		177,959.76
5.	Accrued interest on investments		545,771.22
6.	Dividends declared and payable, but not yet received		75,221.31
7.	Investment in debt securities at amortized cost		17,442,751.26
8.	Investment in G.N.M.A.'s at amortized cost		1,090,981.23
9.	Investment in equities at cost*		14,578,171.08
10.	Deferred yield adjustment account		248,149.47
11.	Participation in MPRI Fund**		<u>19,121,181.00</u>
12.	TOTAL ASSETS		<u>58,853,304.59</u>
B. LIABILITIES AND RESERVES			
<u>Liabilities</u>			
1.	Accounts payable - Security purchases		80,497.88
2.	Due state employees retirement fund		<u>52,646.00</u>
3.	Total liabilities		<u>133,143.88</u>
<u>Reserves</u>			
1.	MPRI Fund Reserve**		19,121,181.00
2.	Disability benefit reserve		1,007,850.00
3.	Survivor benefit reserve - children		126,836.00
4.	Employee contribution reserve		10,251,898.70
5.	State contribution reserve		<u>28,212,395.01</u>
6.	Total reserves (valuation assets)***		<u>58,720,160.71</u>
7.	TOTAL LIABILITIES AND RESERVES		<u>58,853,304.59</u>

* Market value as of June 30, 1981 is \$16,595,269.

** Participation equals Required Reserves for retired lives participating in MPRI Fund.

*** Portion of assets to be applied as valuation assets toward providing benefits.

Table 2(b)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Actuarial Balance Sheet as of June 30, 1981

A. ASSETS

1. Assets on hand from accounting balance sheet:		
a. Reserves for MPRI Fund benefits	19,121,181	
b. All other assets	<u>39,732,124</u>	58,853,305
2. Present value of employees' future contributions		16,545,088
3. Present value of state future contributions applicable to:		
a. Entry age normal costs	22,204,671	
b. Unfunded accrued liability (Balance of "matching" contribution less .18% for operating expense)	5,732,892	
c. Unfunded accrued liability (Portion to be funded by "additional" contribution)	<u>36,064,856</u>	<u>64,002,419</u>
4. TOTAL ASSETS		<u><u>139,400,812</u></u>

) B. LIABILITIES

1. Current liabilities from accounting balance sheet		133,144
2. Present value of earned and earnable benefits payable to presently active members:		
a. Retirement benefits	103,282,703	
b. Disability benefits	7,009,086	
c. Refundments due to death or withdrawal	163,694	
d. Surviving spouse and child benefits	3,432,941	
e. Vested termination benefits	<u>2,951,445</u>	116,839,869
3. Present value of benefits for deferred annuitants		2,163,174
4. Present value of refundment to former members without vested rights		8,758
5. Present value of survivor benefits - children		126,836
6. Present value of disability benefits		1,007,850
7. Participation in MPRI Fund		<u>19,121,181</u>
8. TOTAL LIABILITIES		<u><u>139,400,812</u></u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Chapter 356 Balance Sheet as of June 30, 1981

ASSETS AND UNFUNDED ACCRUED LIABILITY

A. ASSETS(1)

1.	Cash		471.34
2.	Short term investments (at cost)		5,311,051.25
3.	Accounts receivable:		
	a. Accrued employee contributions	64,992.56	
	b. Accrued employer contributions	194,947.76	
	c. Employee buybacks	<u>1,655.35</u>	261,595.67
4.	Due from the MPRI Fund		177,959.76
5.	Accrued interest on investments		545,771.22
6.	Dividends declared and payable, but not yet received		75,221.31
7.	Investment in debt securities at amortized cost		17,442,751.26
8.	Investment in G.N.M.A.'s at amortized cost		1,090,981.23
9.	Investment in equities at cost		14,578,171.08
10.	Deferred yield adjustment account		248,149.47
11.	Participation in MPRI Fund(2)		19,121,181.00
12.	TOTAL ASSETS		<u><u>58,853,304.59</u></u>

B. UNFUNDED ACCRUED LIABILITY

1.	Unfunded accrued liability to be funded by portion of employee contributions and state "matching" contribution in excess of entry age normal cost contribution and operating expenses		5,732,892.00
2.	Unfunded accrued liability to be funded by states "additional" contribution		36,064,856.00
3.	Total unfunded accrued liability		<u>41,797,748.00</u>
4.	TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY		<u><u>100,651,052.59</u></u>

CURRENT LIABILITIES AND RESERVES REQUIRED

C. LIABILITIES

1.	Accounts payable - Security purchases		80,497.88
2.	Due state employees retirement fund		52,646.00
3.	Total liabilities		<u><u>133,143.88</u></u>

D. RESERVES REQUIRED

1.	Total reserves required per attached Table 3(b)		100,517,908.71
2.	TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED		<u><u>100,651,052.59</u></u>

(1) Accumulated contributions, without interest, of members not yet retired amounted to \$10,251,899 as of June 30, 1981 (includes accrued but unpaid contributions).

(2) Participation equals Required Reserves for retired lives participating in the MPRI Fund.

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1981

	<u>Present Value of Benefits</u>	<u>Present Value of Applicable Portion of Normal Cost Contribution</u>	<u>Accrued Liability Equals Reserves Required (1) - (2)</u>
A. DETERMINATION OF ACCRUED LIABILITY			
1. Active Members			
a. Retirement benefits	103,282,703	30,597,764	72,684,939
b. Disability benefits	7,009,086	3,713,188	3,295,898
c. Refundments due to death or withdrawal	163,694	496,357	(332,663)
d. Survivor and childrens' benefits	3,432,941	1,817,590	1,615,351
e. Vested termination benefits	2,951,445	2,124,860	826,585
2. Deferred annuitants	2,163,174	-	2,163,174
3. Former members without vested rights	8,758	-	8,758
4. Survivors - children	126,836	-	126,836
5. Disabled members	1,007,850	-	1,007,850
6. Participation in MPRI Fund	19,121,181	-	19,121,181
7. Total	<u>139,267,668</u>	<u>38,749,759</u>	<u>100,517,909</u>
B. DETERMINATION OF UNFUNDED ACCRUED LIABILITY			
1. Accrued Liability	-	-	100,517,909
2. Valuation assets	-	-	58,720,161
3. Unfunded accrued liability (1 - 2)	-	-	41,797,748

CONTRIBUTIONS

Chapters 356 and 352B set forth requirements as to the level of contributions. Chapter 352B prescribes the actual amount of contributions and Chapter 356 describes the method used to determine the amount of contribution required to fully fund the Normal Cost and the Unfunded Accrued Liability. Together, the actual contribution and required contribution are used to determine the sufficiency of the actual contribution. These calculations are illustrated below.

Annual Requirement in Accordance with Chapter 356:

	<u>Percent of Payroll</u>	<u>Amount</u>
1. Normal cost	15.77	\$3,149,108
2. Assumed operating expense	.18	35,941
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	14.05	2,805,571
4. Total Chapter 356 requirement (1 + 2 + 3)	30.00	5,990,620

Actual Contributions:

1. Employee contributions	7.00	1,397,719
2. Employer "matching" contribution	12.00	2,396,089
3. Employer "additional" contribution	9.00	1,797,067
4. Total Chapter 352B prescribed contribution	28.00	5,590,875

Contribution Sufficiency:

93.3%

The Chapter 356 requirement increased from 28.96% of payroll at June 30, 1980 to 30.00% at June 30, 1981. Reasons for this increase include greater than expected increase in salaries, and increases in the average age and the entry age of the group. Since the level of funding produces only a moderate leveraging effect, these factors more than offset the Fund's favorable investment performance to produce an overall loss.

MINNESOTA POST RETIREMENT INVESTMENT FUND

Background

) The Minnesota Post Retirement Investment Fund (MPRI Fund), previously termed the Minnesota Adjustable Fixed Benefit Fund (MAFB), is basically a vehicle for providing variable annuity payments to pensioners. When an active participant retires, assets equal to the present value of future benefits payable to that participant (and beneficiary, if applicable) are transferred from the State and Employee Contribution Reserves, to the MPRI Fund. Thereafter, benefits are paid from the MPRI Fund. Future benefit increases are determined on the basis of the investment performance of MPRI Fund assets.

Chapter 11A of the Minnesota Statutes provides a method for determining benefit increases. A benefit increase is granted in any year in which the earnings of MPRI Fund assets exceed 5%. In a year in which there is an MPRI Fund deficit (i.e., required reserves exceed MPRI Fund assets), 5% of any income in excess of the 5% requirement is credited towards amortizing the deficit, with the remaining 95% being used to provide benefit increases. If there is no MPRI Fund deficit, all income in excess of the required 5% is used to provide benefit increases. This represents a change from the law in effect in the previous year, when 25% of excess income was credited towards amortizing the deficit.

MPRI Fund Status as of June 30, 1981

) Table 4 sets forth the determination of MPRI Fund net assets and reserve requirements as of June 30, 1981.

As required by Chapter 11A, Table 4 allocates the mortality gain and reserve determinations for January 1, 1982 benefit increase purposes to the eligible and non-eligible groups.

UNFUNDED ACCRUED LIABILITY

) Tables 5 and 6 reconcile the change in the unfunded accrued liability during the year. Table 5 sets forth an illustration that the increase in the unfunded accrued liability is equal to the excess of deductions over income during the year, where any increase in required actuarial reserves is indicated as a deduction item. Table 6 sets forth our analysis of the change in the unfunded accrued liability.

Table 4

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Determination of MPRI Fund Participation and Reserves
as of June 30, 1981

	<u>Members Eligible for 1/1/82 Increase</u>	<u>Members Not Eligible for Increase</u>	<u>Total</u>
1. Unadjusted MPRI Fund Participation as of June 30, 1981	--	--	18,693,936
2. Transfer (from) to MPRI Fund for Mortality (Gain) Loss	(189,755)	11,795	(177,960)
3. Participation as of June 30, 1981 (1) + (2)	--	--	18,515,976
4. Required Reserves as of June 30, 1981	16,220,084	2,901,097	19,121,181
5. Required Reserves as of January 1, 1982	16,012,984	2,873,502	18,886,486

This exhibit does not reflect benefit increases to become effective on January 1, 1982.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Analysis of Income and Deductions from Income and
Effect on the Unfunded Accrued Liability

A. INCOME AND OTHER FINANCING SOURCES		
1. From employees		
a. Employee contributions	1,217,856.70	
b. Employee accrued contributions receivable	<u>64,992.56</u>	1,282,849.26
2. From employers		
a. Employer contributions	2,083,933.60	
b. Employer additional contributions	1,562,633.37	
c. Employer accrued contributions receivable	<u>194,947.76</u>	3,841,514.73
3. From investments		
a. Interest on securities	2,257,600.74	
b. Dividends on corporate stock	833,390.62	
c. Gain on sale of securities	1,381,153.61	
d. Interest on back payments by employees	<u>787.57</u>	4,472,932.54
4. From MPRI Fund participation		1,322,086.37
5. Income adjustment		330.00
6. Transfers from other funds/plans		3,630.00
7. TOTAL INCOME		<u><u>10,923,342.90</u></u>
B. DEDUCTIONS FROM INCOME AND OTHER FINANCING USES		
1. Benefits		
a. Service retirement annuities	1,576,999.68	
b. Disability retirement benefits	58,432.16	
c. Survivor benefits (children)	<u>29,478.80</u>	1,664,910.64
2. Refundments (employee contributions)		
a. Left service	33,888.75	
b. Employee death	7,029.87	
c. Erroneous deductions	<u>227.32</u>	41,145.94
3. Operating expenses		
a. Administrative expenses	52,646.00	
b. Interest expense on lump sum cancellation	<u>5,230.98</u>	57,876.98
4. Increase in total reserves required		
a. Reserves required 6/30/80	85,830,394.00	
b. Reserves required 6/30/81	<u>100,517,909.00</u>	14,687,515.00
5. Lump Sum Payments		<u>59,910.00</u>
6. TOTAL DEDUCTIONS FROM INCOME		<u><u>16,511,358.56</u></u>
7. EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME		<u><u>5,588,015.66</u></u>
C. INCREASE IN UNFUNDED ACCRUED LIABILITY		
1. Unfunded accrued liability 6/30/80*		36,209,732.81
2. Unfunded accrued liability 6/30/81		<u>41,797,748.47</u>
3. INCREASE IN UNFUNDED ACCRUED LIABILITY		<u><u>5,588,015.66</u></u>

* Decreased by \$649.19 to reflect prior period adjustments.

Table 6

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Analysis of Change in the Unfunded Accrued Liability
During the Fiscal Year Ending June 30, 1981

1. Unfunded accrued liability as of June 30, 1980		36,210,382
2. Decrease to reflect prior period adjustments		(649)
3. Restated unfunded accrued liability as of June 30, 1980		36,209,733
4. Change due to current rate of funding and interest requirements		
a. 1980-81 past service contribution	(2,376,013)	
b. 5% interest requirement	<u>1,810,519</u>	(565,494)
5. Change due to actuarial gains (indicated by parentheses) or losses (no parentheses) because of experience deviations from expected		
a. Salary increases	5,513,976	
b. Investment income	(2,711,037)	
c. MPRI Fund mortality gain	(177,960)	
d. Withdrawals, death, disability of active members (balancing item)	<u>3,528,530</u>	<u>6,153,509</u>
6. Unfunded accrued liability as of June 30, 1981		<u>41,797,748</u>

Touche Ross & Co
EMPLOYEE DATA

) The Executive Director furnished us with employee information pertaining to all active members, inactive members and retired members of the Fund. Tables 7 and 8 summarize the changes in active, inactive and retired membership during the year in accordance with the requirements set forth in Section 356.215 of the Minnesota Statutes, Subdivisions 4 and 5. In addition, age and service distributions are provided in Tables 9(a) and 9(b).

Payroll adjustment: The data, reported as of June 30, 1981, reflect an annualized covered payroll of \$18,413,457 which represents total member earnings during the year ended June 30, 1981. Chapter 356, Section 365.215, Subdivision 4 of the Statutes requires that the actuarial valuation reflect salaries that will be in force during the ensuing fiscal year for which the valuation is being performed. Based on salary information submitted by the Executive Director, it was determined that the average July 1981 increase was approximately 8.2% for employees in department 029 and 8.5% for department 007. Accordingly, we increased the reported salaries those percentages. This has resulted in covered payroll of \$19,967,408.

PLAN VALUED

) The provisions of the Minnesota State Retirement System, Highway Patrolmen's Fund are governed principally by Chapters 352B and 11A of the Minnesota Statutes pertaining to MPRI Fund Benefits. Table 10 sets forth a summary of the principal provisions as of June 30, 1981. No changes to Chapter 352B were reported since the last actuarial valuation as of June 30, 1980.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Covered Highway Patrolmen Census Data as of June 30, 1981

	<u>Number</u>	<u>Annual Payroll</u>
Active at June 30, 1980	782	16,848,411
New Entrants*	<u>44</u>	
Total	826	
Less Separations from Active Service:		
Refund of Contributions*	7	99,984
Separation with a Vested Right to a Deferred Annuity	3	45,189
Separation with Neither Refund or Right to a Deferred Annuity	1	23,486
Disability	1	20,467
Service Retirement	20	461,725
Death	<u>1</u>	18,054
Total Separations	33	
Active at June 30, 1981	793	18,413,457

Average Entry Age of New Employees

<u>For the Fiscal Year Ending</u>	<u>Male</u>	<u>Female</u>	<u>Average of Total</u>
6/30/78	26.1	26.3	26.1
6/30/79	28.2	26.5	28.1
6/30/80	25.7	22.5	25.5
6/30/81	27.6	27.8	27.6

Average age at entry in State service for all active employees at 6/30/81:

Male	26.8
Female	25.0
Total	26.8

* Includes those who entered the plan and terminated during the period from July 1, 1980 to June 30, 1981.

Table 8

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Highway Patrolmen's Plan Annuitant Census Data as of June 30, 1981

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>Service Retirement Annuitants</u>		
Receiving at June 30, 1980	179	1,183,155.36
New	21	234,687.36
Deaths	7	34,514.28
Adjustments-Net Result	2	34,193.16
Receiving at June 30, 1981	195	1,417,521.60
B. <u>Disabled Employees</u>		
Receiving at June 30, 1980	9	58,917.24
New	1	11,942.16
Deaths	0	0.00
Adjustments-Net Result	0	3,339.12
Receiving at June 30, 1981	10	74,198.52
C. <u>Widows Receiving an Annuity or Survivor Benefit</u>		
Beneficiaries Receiving an Optional or Reversionary Annuity:		
Receiving at June 30, 1980	87	246,488.40
New	7	18,278.52
Deaths	5	12,251.16
Adjustments-Net Result	(4)	7,167.60
Receiving at June 30, 1981	85	259,683.36

Table 8 (con't)

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
D. <u>Children Receiving a Survivor Benefit</u>		
Receiving at June 30, 1980	27	30,638.28
New	0	0.00
Reinstated	1	1,039.68
No longer eligible	6	6,477.00
Adjustments-Net Result	0	1,332.48
Receiving at June 30, 1981	22	26,533.44
E. <u>Deferred Annuitants</u>		
Deferred as of June 30, 1980	23	167,971.08
New	4	58,704.00
Began Receiving	2	14,090.40
Deferred as of June 30, 1981	25	212,584.68

Average Age at Retirement of New Service Annuitants

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/77	58.2
6/30/78	57.8
6/30/79	59.0
6/30/80	57.6
6/30/81	61.4
All Existing Service Annuitants	58.8

Table 9(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Service Groups by Age Groups

Age Group	Service Group						Total
	0-4	5-9	10-14	15-19	20-24	25 & over	
<u>Male</u>							
0 - 19							0
20 - 24	28						28
25 - 29	72	12					84
30 - 34	35	59	33				127
35 - 39	11	32	106	7			156
40 - 44	3	3	56	39	1		102
45 - 49	0	2	9	29	41	4	85
50 - 54	1	3	3	22	37	42	108
55 - 59	0	1	6	9	15	34	65
60 - 64	0	0	2	0	7	9	18
65 & over	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	150	112	215	106	101	89	773

<u>Female</u>							
0 - 19							0
20 - 24	3						3
25 - 29	4	5					9
30 - 34	1	2	1				4
35 - 39	1	2	0				3
40 - 44	0	0	0				0
45 - 49	0	0	0				0
50 - 54	0	1	0				1
55 - 59	0	0	0				0
65 & over	<u>0</u>						
Total	9	10	1	0	0	0	20

Table 9(b)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Distribution of Annual Earnings by Age Groups

Age Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0 - 19	0	0	0	0	0	0	0	0	0
20 - 24	28	550,582	19,664	3	58,857	19,619	31	609,438	19,659
25 - 29	84	1,682,972	20,035	9	188,979	20,998	93	1,871,951	20,129
30 - 34	127	3,052,258	24,034	4	98,068	24,517	131	3,150,326	24,048
35 - 39	156	4,018,597	25,760	3	77,073	25,691	159	4,095,670	25,759
40 - 44	102	2,691,679	26,389	0	0	0	102	2,691,679	26,389
45 - 49	85	2,346,302	27,604	0	0	0	85	2,346,302	27,604
50 - 54	108	2,893,017	26,787	1	25,404	25,404	109	2,918,420	26,774
55 - 59	65	1,833,053	28,201	0	0	0	65	1,833,053	28,201
60 - 64	18	450,569	25,032	0	0	0	18	450,569	25,032
65 & over	0	0	0	0	0	0	0	0	0
Total	773	19,519,027	25,251	20	448,381	22,419	793	19,967,408	25,180

Distribution of Annual Earnings by Service Groups

Service Group	Male			Female			All		
	No.	Total	Average	No.	Total	Average	No.	Total	Average
0	24	305,454	12,727	1	23,155	23,155	25	328,609	13,144
1	54	1,078,670	19,975	4	74,441	18,610	58	1,153,110	19,881
2	30	650,575	21,686	2	38,734	19,367	32	689,309	21,541
3	28	656,179	23,435	0	0	0	28	656,179	23,435
4	14	301,248	21,518	2	47,409	23,704	16	348,656	21,791
0-4	150	2,992,126	19,948	9	183,738	20,415	159	3,175,864	19,974
5-9	112	2,765,644	24,693	10	235,494	23,549	122	3,001,138	24,599
10-14	215	5,725,313	26,629	1	29,149	29,149	216	5,754,462	26,641
15-19	106	2,798,411	26,400	0	0	0	106	2,798,411	26,400
20-24	101	2,734,415	27,073	0	0	0	101	2,734,415	27,073
25-29	69	1,943,894	28,172	0	0	0	69	1,943,894	28,172
30-34	19	537,649	28,297	0	0	0	19	537,649	28,297
35-39	1	21,575	21,575	0	0	0	1	21,575	21,575
40+	0	0	0	0	0	0	0	0	0
Total	773	19,519,027	25,251	20	448,381	22,419	793	19,967,408	25,180

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND
ANNUITANTS IN M'IRF
(INCLUDES RETIRED AND DISABLED)

TABLE 9(C)

DISTRIBUTION OF ANNUAL BENEFIT BY AGE GROUPS

AGE GROUP	MALE				FEMALE				ALL
	NO.	TOTAL	AVERAGE	NO.	TOTAL	AVERAGE	NO.	TOTAL	
UNDER 40	0	0	0	1	2101	0	1	2101	2101
40-44	0	0	0	0	0	0	0	0	0
45-49	0	0	0	1	2078	2078	1	2078	2078
50-54	0	0	0	5	30584	6117	5	30584	6117
55-59	30	284742	9491	6	29816	4969	36	314558	8738
60-64	53	468707	8844	8	32514	4064	61	501221	8217
65-69	43	320205	7447	14	48949	3496	57	369154	6476
70-74	36	188340	5232	16	43527	2720	52	231867	4459
75-79	22	107387	4881	12	26431	2203	34	133818	3936
80-84	7	31285	4469	15	33984	2266	22	65269	2967
85+	3	9500	3167	8	17052	2132	11	26552	2414
TOTAL	194	1410166	7269	86	267036	3105	280	1677202	5990

DISTRIBUTION OF ANNUAL BENEFIT BY SERVICE GROUPS

YEARS RETIRED	MALE				FEMALE				ALL
	NO.	TOTAL	AVERAGE	NO.	TOTAL	AVERAGE	NO.	TOTAL	
0	21	212895	10138	0	0	0	21	212895	10138
1	12	119636	9970	1	11883	11883	13	131519	10117
2	14	129862	9276	0	0	0	14	129862	9276
3	16	157132	9821	3	22981	7660	19	180113	9480
4	14	134690	9621	4	21443	5361	18	156133	8674
0-4	77	754215	9795	8	56307	7038	85	810522	9536
5-9	48	348671	7264	11	52850	4805	59	401521	6805
10-14	38	190165	5004	14	41865	2990	52	232030	4462
15-19	22	84378	3835	18	38707	2150	40	123085	3077
20-24	8	28827	3603	27	59904	2219	35	88731	2535
25+	1	3910	3910	8	17403	2175	9	21313	2368
TOTAL	194	1410166	7269	86	267036	3105	280	1677202	5990

Table 9(d)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S RETIREMENT FUND

Annuitants in MPRIF
(Includes Retired and Disabled)

Distribution of Years Retired by Age Groups

<u>Age Group</u>	<u>Years Retired</u>						<u>Total</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25 & over</u>	
<u>Male</u>							
Under 40	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0
50 - 54	0	0	0	0	0	0	0
55 - 59	27	3	0	0	0	0	30
60 - 64	41	12	0	0	0	0	53
65 - 69	9	24	10	0	0	0	43
70 - 74	0	5	17	14	0	0	36
75 - 79	0	4	6	6	6	0	22
80 - 84	0	0	5	0	1	1	7
85 & over	0	0	0	2	1	0	3
Total	77	48	38	22	8	1	194
<u>Female</u>							
Under 40	0	1	0	0	0	0	1
40 - 44	0	0	0	0	0	0	0
45 - 49	0	0	1	0	0	0	1
50 - 54	3	1	1	0	0	0	5
55 - 59	3	1	1	1	0	0	6
60 - 64	2	2	3	0	1	0	8
65 - 69	0	5	1	6	2	0	14
70 - 74	0	1	4	4	4	3	16
75 - 79	0	0	2	3	6	1	12
80 - 84	0	0	1	2	10	2	15
85 & over	0	0	0	2	4	2	8
Total	8	11	14	18	27	8	86

Table 10

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Summary of Principal Plan Provisions as of June 30, 1981

1. Coverage: From first date of employment.
2. Service Credit: Service is credited from date of coverage. For State Police Officers hired after July 1, 1961 no service is credited after age 60.
3. Contributions:
 - a. Employee: 7% of salary
 - b. State of Minnesota: 21% of salary
4. Final Average Salary: Monthly average for the highest 5 successive years of salary.
5. Normal Retirement:
 - a. Eligibility: Attainment of age 55 and completion of 10 years of service.
 - b. Benefit Amount: 2-1/2% of Final Average Salary for each of the first 20 years of service plus 2% of Final Average Salary for each year of service thereafter.
6. Form of Payment: Life annuity with actuarially equivalent options also available.
7. Disability Retirement:
 - a. Eligibility:
 - . In line of duty: None.
 - . Not in line of duty: Five years of service and less than age 55.

- b. Benefit Amount:
- . In line of duty: 50% of average monthly salary plus 2% for each year of service in excess of 20, offset by Workers' Compensation.
 - . Not in line of duty: 2-1/2% of average monthly salary for each year up to and including 20 years plus 2% for each year in excess of 20, subject to a minimum of 25% of average monthly salary
- c. Death benefits: If a member dies while receiving a work related disability benefit, or a non-work related disability benefit after having completed 20 years of service, 20% of his Final Average Salary is payable to the surviving spouse for life.
8. Deferred Service Retirement:
- a. Eligibility: Completion of 10 years of service.
 - b. Benefit Amount: Retirement benefits payable at normal retirement date are determined according to the normal retirement benefit formula based on the member's Final Average Salary and service at termination, such amount being subject to an increase for each year between termination and retirement of 5% for years prior to January 1, 1981 and 3% compounded annually thereafter.
9. Return of Contributions: If a member terminates before becoming eligible for any other benefits under the plan, his employee contributions are returned.
10. Surviving Spouse Death Benefit:
- a. Eligibility: Death of member in service.
 - b. Benefit Amount: 20% of Final Average Salary with 20 or more years of service, changes to a 100% Joint & Survivor annuity amount as of the date the employee would have attained age 55.

11. Children's Death Benefits:

a. Eligibility:

Death benefits are payable to children (below age 18, or 22 if a student) of members who die in active service.

b. Amount:

10% of Final Average Salary, plus \$20 per month prorated equally to such children.

c. Maximum:

Total benefit to all children may not exceed 40% of Final Average Salary.

12. Repayment of Contributions:

a. Eligible Members:

Rehired members.

b. Repayment Provision:

Such rehired member may repay all refundments made to him, including interest at 5% compounded annually. In such case, service previously credited during the prior period of membership is restored.

13. Combined Service Provisions:

a. Eligible Members:

Members who have had coverage under two or more Minnesota Public Retirement Systems, with a total of at least 10 years of credited service.

b. Benefit Provisions:

Benefits under both plans are based on the highest Final Average Salary including all years from both plans, and on the plans in effect on the member's last day in covered public employment.

14. Proportionate Annuity:

Any member who terminates after attaining age 65 and completing at least one year of service is entitled to a proportionate retirement annuity based on his allowable service credit.

ACTUARIAL METHODS AND ASSUMPTIONS

) Actuarial Methods

Chapter 356 of the Minnesota Statutes calls for the determination of normal cost and accrued liability in accordance with the entry age normal cost method, one of several available projected cost methods. We have continued to use the version employed in prior years.

Under the method used, the normal cost is first determined (based on the age at hire of each member) as the level annual dollar deposit required to pay for the cost of each member's projected benefits over a period from his date of hire to his date of retirement. The accrued liability is, by definition, equal to the present value of all projected benefits under the plan less the present value of all future normal costs (the level dollar normal costs are used for this purpose). The unfunded accrued liability is the net of the accrued liability and current valuation assets on hand.

To comply with the requirements of Chapter 356 which call for normal cost to be determined as a level percentage of salary, the level dollar normal cost is then converted to a level percentage of payroll basis, by applying an approximation which produces a mathematical equivalency.

) Tables 11(a) and 11(b) summarize the actuarial assumptions used.

Table 11(a)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S PLAN

Summary of Actuarial Assumptions and Methods

1. Mortality: 1971 Group Annuity Mortality Table with ages set back 8 years for females.
2. Withdrawal: Graded rates starting at .03 at age 20 and decreasing uniformly to zero at age 50, as set forth in the Separation From Active Service Table.
3. Disability: The rates of disability were adapted from experience of the New York State Employees' Retirement System, as set forth in the Separation From Active Service Table.
4. Expenses: .18% of covered payroll.
5. Interest Rate: 5% per annum.
6. Salary Scale: 3-1/2% per annum.
7. Assumed Retirement Age: Age 57 for Highway Patrolmen and for State Police Officers hired after June 30, 1961. Age 63 for State Police Officers hired before July 1, 1961.
8. Actuarial Cost Method: Individual level dollar entry age cost method, modified to approximate a level percentage of future payroll normal cost.
9. Assumed survivor status: 100% assumed married, female spouse 3 years younger. Fifteen percent load on spouse benefits for children's benefits.
10. Contribution refund: All employees withdrawing after ten years of service were assumed to leave their contributions on deposit and receive a deferred annuitant benefit.

Table 11(b)

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S PLAN

Probabilities of Separation From Active Service
(Number Separating at Each Age Per 10,000 Working at That Age)

Age	Death *		Withdrawal**	Disability**
	Males	Females		
20	5	4	300	4
21	5	4	290	4
22	5	4	280	5
23	6	4	270	5
24	6	4	260	6
25	6	5	250	6
26	7	5	240	6
27	7	5	230	7
28	7	5	220	7
29	8	5	210	8
30	8	5	200	8
31	9	6	190	9
32	9	6	180	9
33	10	6	170	10
34	10	7	160	10
35	11	7	150	11
36	12	7	140	12
37	13	8	130	13
38	14	8	120	15
39	15	9	110	16
40	16	9	100	18
41	18	10	90	20
42	20	10	80	22
43	23	11	70	24
44	26	12	60	26
45	29	13	50	29
46	33	14	40	32
47	38	15	30	36
48	42	16	20	41
49	47	18	10	46
50	53	20		50
51	59	23		57
52	65	26		64
53	71	29		72
54	78	33		80

Table 11(b) (continued)

<u>Age</u>	<u>Death</u> *		<u>Withdrawal**</u>	<u>Disability**</u>
	<u>Males</u>	<u>Females</u>		
55	85	38		88
56	93	42		98
57	100	47		108
58	109	53		118
59	119	59		129
60	131	65		141
61	144	71		154
62	159	78		167

* 1971 Group Annuity Mortality Table, with age set back 8 years for females.

** Same withdrawal and disability rates pertain to males and females.

APPENDIX

MINNESOTA STATE RETIREMENT SYSTEM
HIGHWAY PATROLMEN'S FUND

Table References to Chapter 356 and Chapter 11A

Table Number	Description**	References
1(a)	Summary of Actuarial Valuation as of June 30, 1981	356.215 Subd. 4(1)
2(a)	Accounting Balance Sheet	356.215 Subd. 4(7)
2(b)	Actuarial Balance Sheet	
3(a)	Chapter 356 Balance Sheet	356.20 Subd. 4(1)
3(b)	Determination of Accrued Liability and Unfunded Accrued Liability	356.215 Subd. 4(2)
4	Determination of MPRI Fund Participation and Reserves	356.215 Subd. 4(6)
5	Determination of Income and Deductions From Income and Effect on the Unfunded Accrued Liability	356.215 Subd. 4(8)
6	Determination of Change in the Unfunded Accrued Liability During the Fiscal Year Ending June 30, 1980	11A.18 Subd.(9), (11)
7	Covered Employee Census Data	356.20 Subd. 4(2)
8	General Annuitant Census Data	356.20 Subd. 4(3)
9(a)	Service Groups by Age Groups	356.215 Subd. 4(11)
9(b)	Distribution of Annual Earnings by Age Groups	
10	Summary of Principal Plan Provisions	356.215 Subd. 4(9)
11(a)	Summary of Actuarial Assumptions and Methods	
11(b)	Probabilities of Separation from Active Service	356.20 Subd. 4(4)
		356.215 Subd. 4(10)

* Chapter 356 and 11A of the Minnesota Statutes.

** All as of June 30, 1981.

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

FROM: James R. Bordewick, F.S.A., Commission Actuary

RE: June 30, 1981 Actuarial Valuation of Minnesota State Retirement System - Highway Patrolmen's Fund

DATE: February 18, 1982

The purpose of this memorandum is to review and discuss the results of the June 30, 1981 Actuarial Valuation of the Minnesota State Retirement System - Highway Patrolmen's Fund. This Actuarial Valuation was prepared by John H. Flittie and Andrea Feshbach of the firm of Touche Ross & Co.

The Actuarial Valuation was conducted using the Entry Age Normal Cost actuarial method, interest at 5%, and a salary increase assumption of 3½% which are in accordance with Minnesota Statutes, Chapter 356.

There were no changes in the major actuarial assumptions from the previous year. In addition, there were no changes in the provisions of the plan since the last Actuarial Valuation.

SUMMARY OF ACTUARIAL VALUATION RESULTS

1. Membership	<u>6-30-80</u>	<u>6-30-81</u>	<u>Increase</u>	
Active Members	782	793	11	
Deferred Annuitants	23	25	2	
Retired Members	179	195	16	
Disabled Members	9	10	1	
Survivors and Beneficiaries	114	107	- 7	
	<u>1,107</u>	<u>1,130</u>	<u>23</u>	
2. Payroll	<u>6-30-80</u>	<u>6-30-81</u>	<u>Increase</u>	<u>(%)</u>
	\$18,003,587	\$19,967,408	\$ 1,963,821	10.9%
3. Annuities In Force: Annual Basis	\$ 1,519,199	\$ 1,777,937	\$ 258,738	17.0%

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SUMMARY OF ACTUARIAL VALUATION RESULTS

4. Actuarial Balance Sheet:	<u>6-30-80</u>	<u>6-30-81</u>	<u>Increase</u>	(%)
Accrued Liabilities				
Annuities In Force	\$ 17,270,269	\$ 20,255,867	\$ 2,985,598	(17.3%)
Deferred Annuities	1,575,502	2,171,932	596,430	(37.9%)
Active Members	66,984,623	78,090,110	11,105,487	(16.6%)
	<u>\$ 85,830,394</u>	<u>\$100,517,909</u>	<u>\$14,687,515</u>	<u>(17.1%)</u>
Assets	\$ 49,620,012	\$ 58,720,161	\$ 9,100,149	(18.3%)
Unfunded Accrued Liability	\$ 36,210,382	\$ 41,797,748	\$ 5,587,366	(15.4%)
Funding Ratio	57.8%	58.4%	.6%	
Prospective Funding Ratio*	47.2%	47.9%	.7%	

* Assets less Accrued Liabilities for Annuities In Force divided by Accrued Liabilities for other than Annuities In Force.

5. Analysis of Increase in Unfunded Accrued Liability

The Unfunded Accrued Liability increased by \$5,587,366 from June 30, 1980 to June 30, 1981. The items making up this increase are shown below:

Actuarial Experience

Interest	\$2,711,037	Gain
Salary	5,513,976	Loss
Mortality: Retired Members	177,960	Gain
Pre-Retirement Experience	3,528,530	Loss
Miscellaneous	649	Gain
	<u>\$6,152,860</u>	<u>Loss</u>

Contribution Deficiency (\$ 565,494)

\$5,587,366

6. Contribution Levels and Support Rates

Based on the Actuarial Valuation results, the contribution, as a percentage of payroll, which will prevent the Unfunded Accrued Liability from increasing is 26.42%. The contribution, as a percentage of payroll, which will amortize the Unfunded Accrued Liability by June 30, 2009 is 30.00%. The current contribution rate is 7% of pay by employees and 21% of payroll by employers.

SUMMARY OF ACTUARIAL VALUATION RESULTS

6. Contribution Levels and Support Rates (cont.)

A comparison of the funding costs and support rates, as a percentage of payroll, are shown below:

	<u>6-30-80</u>	<u>6-30-81</u>
<u>Contribution Required to Keep the Unfunded Accrued Liability from Increasing:</u>		
Normal Cost	15.50%	15.77%
Expense	.18	.18
Interest	10.06	10.47
	<u>25.74%</u>	<u>26.42%</u>
 <u>Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2009:</u>		
Normal Cost	15.50%	15.77%
Expense	.18	.18
Amortization	13.28	14.05
	<u>28.96%</u>	<u>30.00%</u>
 <u>Current Support:</u>		
Member	7.00%	7.00%
Employer	12.00	12.00
Additional	9.00	9.00
	<u>28.00%</u>	<u>28.00%</u>

If the percentages as of June 30, 1981 are applied to the participating payroll of \$19,967,408, the following contribution amounts would result:

Contribution Required to Keep the Unfunded Accrued Liability from Increasing:	\$5,275,389
Contribution Required to Amortize Unfunded Accrued Liability by June 30, 2009:	\$5,990,222
Current Support:	\$5,590,874

DISCUSSION OF ACTUARIAL VALUATION RESULTS

1. Total membership in the plan increased slightly from a year ago. Total payroll increased by 10.9%. Payroll as of June 30, 1981 was adjusted (increased) by 8.2% to 8.5% to reflect approximated payroll for the year ended June 30, 1982. The corresponding increase for the prior year was 6%.

DISCUSSION OF ACTUARIAL VALUATION RESULTS

2. The Funding Ratio and the Prospective Funding Ratio were fairly constant over the last two year period. The value of accrued benefits to June 30, 1981 was covered by the assets to the extent of 64.2%. This compares with a percentage of 63.1% a year ago. If realistic actuarial assumptions were utilized, the percentage of asset coverage of accrued benefits would be higher.
3. The actuarial loss from pre-retirement experience - deaths, withdrawal, disability, and retirement - was much larger this year than in previous years. There were fewer terminations this year, retirements occurred at a higher benefit level than anticipated, and part of the actuarial loss may be due to the approximate actuarial cost method utilized.

The gains from interest were primarily due to a \$1,381,154 gain on the sale of securities.

4. Members contributions were \$10,251,899 as of June 30, 1981. This compares with \$9,432,724 as of June 30, 1980.
5. The total contribution of 19% - 7% by members and 12% by the employer is more than sufficient to provide for the normal cost and expenses. Part of this contribution and the additional contribution of 9% is used to amortize the Unfunded Accrued Liability.

The current support is slightly below the amount required to amortize the Unfunded Accrued Liability by June 30, 2009. Unless sizeable actuarial gains occur, it is projected that this deficit will continue and be greater than 2% in future years.

6. The actuarial method utilized to determine the costs and liabilities of the plan is an approximation to the Entry Age Normal percentage of pay method. Consideration should be given to adopting a truer approach. It is probable that the contribution rates which are actuarially determined would be higher if the approximation was eliminated.

CONCLUSION

The Actuarial Valuation report complies with the requirements of Minnesota Statutes, Chapter 356. It is expected that there will be some deterioration in the difference between current support rates and the amortization rate in future years.

James R. Bordewick

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